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A Descriptive List of Species of the Genus Heuchera.

By Wm. E. Wheelock.

The genus is accepted as defined by Bentham and Hooker, Gen. Pl. i. 638.

The description of the calyx given below, including its dimensions, refers in every case to the calyx at the time of flowering; the fruiting calyx being, as a rule, much larger and quite different in form.

§ 1. Stamens exserted sooner or later.

† Flowering calyx 1″ to 1½″ long.

* Inflorescence loosely paniculate or cymose-paniculate.

1. *H. Rugelii.*
2. *H. glabra.*
3. *H. micrantha.*
4. *H. villosa.*

** Inflorescence cymose-subspicate.

5. *H. minutiflora.*

*** Inflorescence a long, narrow panicle; flowers clustered.

6. *H. pilosissima.*

†† Flowering calyx 1½″ to 3″ long.

* Inflorescence a large, densely flowered, narrow thyrsus.

7. *H. maxima.*

** Inflorescence paniculate or cymose-paniculate.

8. *H. Americana.*
9. *H. longipetala.*
10. *H. Orizabensis.*
11. *H. rubescens.*

*** Inflorescence glomerate-spicate, often secund.

12. *H. bracteata.*

††† Flowering calyx 3″ to 5″ long.

* Inflorescence an open, spreading panicle.

13. *H. pubescens.*

** Inflorescence a narrow panicle.

14. *H. hispida.*

§ 2. Stamens always included.
† Flowering calyx 1″ to 2″ long.
‡ Flowering calyx campanulate.
* Inflorescence a long, narrow, racemose panicle.
15. *H. Nova-Mexicana.*
** Inflorescence a short racemose panicle.
16. *H. Hallii.*
‡‡ Flowering calyx almost rotate, limb flat, dilated.
17. *H. parvifolia.*
†† Flowering calyx 2″ to 5″ long.
* Inflorescence a loose, few-flowered raceme.
18. *H. racemosa.*
19. *H. Williamsii.*
** Inflorescence thyrsoid.
20. *H. sanguinea.*
*** Inflorescence more or less spicate.
21. *H. cylindrica.*

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§ 1. Stamens exserted sooner or later.
† Flowering calyx 1″ to 1½″ long.
* Inflorescence loosely paniculate or cymose-paniculate.

1. H. RUGELII, Shuttlew.; Kunze, Linnæa, xx. 43, (1847).

Slender stems, 6′–2° high, and also petioles, glandular-hirsute to lanate-villous; leaves 2′ to 5′ broad, round-reniform, slightly 7 or 9 lobed, lobes broad; calyx at time of flowering campanulate, about 1″ long, beset with scattered soft hairs; petals small, linear-spatulate, two to three times as long as calyx lobes; stamens much exserted.

North Carolina.—Broad River, Rugel, Porter; Macon Co., Boynton; Burke Co., Torr. Herb.; Transylvania Co., J. D. Smith. *Tennessee.*—Warmsprings, Rugel; Cumberland Mts., Gattinger. *Illinois.*—Union Co., French; Makanda, Forbes.

2. H. GLABRA, Willd.; Rœm and Schult. Syst. vi. 216, (1820).

Tiarella colorans, Graham, Edinb. Phil. Journ., 349, (1829).

H. divaricata, Fisch.; Seringe, D.C. Prodr. iv. 51, (1830).

Slender; stems, usually bearing one or two leaves, 1° to 2° high, almost glabrous up to the minutely glandular pedicels; root-leaves 2′ to 3′ broad, glabrous or nearly so, incised, lobes 7 or 9, acute; calyx at time of flowering about 1″ long, campanulate, glandular-pubescent; petals rather narrowly spatulate with a slender claw, about three times as long as calyx lobes; stamens much exserted.

Oregon.—Tolmie. *Washington.*—Tweedy; Base Mt. Paddo

(Adams), Suksdorf, No. 546; Fort Vancouver, Hooker. *British Columbia.*—Tolmie, McKay; Selkirk Range, Macoun; Norfolk Sound, Eschscholtz; Observatory Inlet, Scouler. *Alaska.*—Sitka, Bischoff, Bongard; Popoff St., Dall.; Kodiak, Kellogg, No. 257; Harrisburg, Meehan.

3. H. MICRANTHA, Dougl.; Lindl. Bot. Reg. xv. t. 1302. (1830).

H. Barbarossa, Presl. Rel. Hænk. ii. 56, (1835).

Stems, usually bearing a few leaves, 1° to 2° high, glabrous or slightly villous with rusty hairs; petioles and larger veins of the leaves on the lower surface more or less villous; root-leaves 2′ to 3 broad, ovate-cordate, unequally 5 to 9-lobed, veins on lower surface distinct; calyx at time of flowering campanulate, about 1″ long, lobes sparsely covered with fine hairs; petals narrowly spatulate, two to three times as long as calyx lobes; stamens moderately exserted.

Mexico.—Hacienda de Regla, Dr. Halsted. *California.*—Monterey, Parry; Nevada Falls, Redfield, No. 97; Marin Co., Vasey, No. 174; Yosemite Valley and Mts., Torrey, No. 151; Yosemite Valley, Brewer, No. 1,667; Yuba, Bigelow, Bridges, No. 128; Aptos, Pringle, Bolander, Nos. 2,463 and 6,351; Oakland Redwoods, Bolander, No. 121; San Luis Obispo, Palmer, No. 124; Cañon S. of Diablo, Brewer, Nos. 1,100 and 1,155; Plumas Co., Mrs. Ames; Spanish Peak, Mrs. Austin; Oakland Hills, Kellogg and Harford, No. 243; Mendocino Co., Vasey, Bolander, No 6,531; Santa Lucia Mts., G. R. Vasey, No. 173. *Oregon.*—Nuttall, Lieut. Mullen, Elihu Hall, No. 159; Klickitat Co., Suksdorf. *Washington.*—Yakima, Brandegee, No. 298; Cascades, Kellogg and Harford; Columbia River, Nuttall, Suksdorf, Scouler, Barclay; Puget Sound, U. S. Explor. Exp. *Vancouver's Island.*—Lyall, Macoun; Mt. Benson, Macoun. *British Columbia.*—Agassiz, Macoun; Franklin's Journey, Hooker; Victoria, Dawson.

4. H. VILLOSA, Michx., Fl. i. 172, (1803).

H. caulescens, Pursh., Fl. i. 188, (1814).

H. acerifolia, Raf., Med. Fl. i. 241 and 244, (1828).

H. parviflora, Bartling, Ind. Sem. h. Gœtt., (1838).

H. Curtisii, Gray, Amer. Journ. Sci. (I.), xlii. 15. (1842)?

Stems, naked or bearing a few small leaves, 1° to 3° high, at base villous with rusty hairs, as are also the petioles and the larger veins on the lower surface of the leaves; the entire plant, in some specimens, nearly or quite glabrous; root-leaves 3′ to 5′

broad, acutely or obtusely 7 or 9-lobed; calyx at time of flowering about 1″ long, campanulate; petals linear-spatulate, about twice as long as calyx lobes; stamens much exserted.

The species as here accepted exhibits a remarkable variety of leaf forms.

West Virginia.—On New River, Porter. *Virginia.*—Porter; Natural Bridge, Gray and Carey, Dr. and Mrs. Britton; South Peak of Otter and Bedford Co., Curtiss; Giles Co., Canby, Redfield; Wytheville, Shriver. *North Carolina.*—Porter, Curtis, Carey, Vasey; Mitchell Co., Redfield; Macon Co., Highlands, J. D. Smith; Rich Mts., Transylvania Co., J. D. Smith. *South Carolina.*—Nuttall; Cæsar's Head, J. D. Smith. *Tennessee.*—Warmsprings, Rugel; Cumberland River, Nashville, Canby; Roan Mt., Dr. and Mrs. Britton; Mountains, Gattinger. *Kentucky.*—Lexington, Short; Banks of Kentucky River, Peter. Glabrous forms. *South Carolina.*—Bridal Vail Falls, J. D. Smith. *Georgia.*—Tococa Falls, Curtiss, No. 860.

The specimen on which *H. Curtisii* was founded does not appear to exist in either the Torrey or the Gray Herbarium.

** Inflorescence cymose-subspicate.

5. H. MINUTIFLORA, Hemsley, Diag. Pl. Nov. pars iii. p. 50, (1880).

"Stems, often bearing three or four leaves, 1° to 1½° high, villous below, as are also the petioles; leaves round-cordate, 1′ to 2′ broad, somewhat lobed, crenate-denticulate, 7 nerved, smoothish on both sides; calyx at time of flowering about 1″ long, rather broadly campanulate, lobes oblong, obtuse; petals linear, hardly longer than calyx lobes; stamens included at first, but at length slightly exserted."

South Mexico.—Popocatapetl, H. Christy, (fide Hemsley).

*** Inflorescence a long, narrow panicle; flowers clustered.

6. H. PILOSISSIMA, Fisch. and Mey., in Ind. Sem. h. Petrop. v. 36, (1838).

H. hispida, Hook. and Arn. Bot. Beechey, 347, (1841); not of Pursh.

H. hirtiflora, Torr. and Gray, Fl. N. A., i. 582, (1840).

Villous with rusty, viscid hairs; stems, usually bearing a few leaves, 1° to 2° high; root-leaves rough, 2′ to 3′ wide, broadly ovate-cordate, lobes rather obtuse, crenate-dentate; calyx at time of flowering short and broad, open, about 1½″ long, densely

hairy; petals narrowly spatulate, hardly longer than calyx lobes; stamens very slightly exserted.

California.—Douglas, Coulter, No. 182, Kellogg and Harford, No. 245; Big River, Mendocino City, Bolander, No. 4,830.

Var. HARTWEGI, Watson, in Herb. Gray.

Panicle loose and more open; stems 2° to 3° high; the entire plant, but especially the calyx, less hairy.

California.—Hartweg. No. 1,742; Clark's Creek, S. Luis Obispo, Palmer, No. 124; Mendocino Co., Bolander, with 4,830 and=4,820; Santa Lucia Mts., Brandegee, Vasey, No. 173.

This plant seems to stand between *H. micrantha* and *H. pilosissima*, often much resembling the former in its foliage as well as in the shape of its panicle.

†† Flowering calyx 1½″ to 3″ long.

* Inflorescence a large, densely flowered, narrow thyrsus.

7. H. MAXIMA, Greene, Bull. Calif. Acad. Sci. ii. p. 149, (1886).

Stout leafy peduncles and equally long petioles villous, or hirsute and glandular, arising from brown, ½′ thick, decumbent stems, rough with the persistent bases of former leaves; leaves large, round-cordate to broadly-ovate cordate, 3′ to 6′ broad, obtusely 5 to 9-lobed, lobes crenate-dentate, the teeth bristle-pointed, ciliate; calyx at time of flowering rather short-campanulate, somewhat acute at base, minutely glandular, 2″ to 3″ long, lobes obtuse, pubescent; petals 1″ to 1½″ long, lanceolate with a prominent central vein; stamens slightly exserted.

Island Santa Cruz, Coast of California, Greene.

** Inflorescence paniculate or cymose-paniculate.

8. H. AMERICANA, L. Spec. Pl. i. 226, (1753).

H. scapigera, Mœnch, Meth. 674, (1794).

H. cortusa, Michx. Fl. i. 171, (1803).

H. viscida, Pursh, Fl. i. 187, (1814).

H. foliosa, Raf., fide spec. Herb. Torr.

H. reniformis, Raf. in Herb. Phil. Acad.

Stems more or less glandular–hirsute, 2° to 3° high, naked, or bearing a few small leaves; root-leaves 3′ to 4′ broad, ovate-cordate, with 7 or 9 rounded, crenate-dentate lobes, the older leaves usually with short, scattered hairs on the upper surface; calyx at time of flowering broadly campanulate, open, 1½″ to 3″ long,

minutely glandular; petals very small, usually not projecting beyond calyx lobes; stamens much exserted.

Ontario.—Amherstburg, Macoun. *Connecticut.*—Wheelock. *New Jersey.*—Beck; Princeton, Torrey; Hudson Co, D. C. Eaton. *Pennsylvania.*—Near Philadelphia, Redfield; Chester Co., Canby; Easton, Schweinitz. *Delaware.*—Wilmington, Canby. *Washington, D.C.*—Vasey, Ward. *Virginia.*—Harper's Ferry, Porter; Wytheville, Shriver; Bedford Co., Curtiss; Lexington, "Potomak," Rafinesque, in Torr. Herb. (*H. foliosa.*) *North Carolina.*—Buncombe Co., Turkey Creek, near Morganton, Canby; Mts., Vasey, Croom; Bethany and Salem, Schweinitz. *Alabama.*—Buckley. *Louisiana.*—Red River, Hale. *Tennessee.*—Nashville, Gattinger. *Kentucky.*—Short. *Indiana.*—M. S. Coulter.

9. H. LONGIPETALA, Ser., in DC. Prodr. iv. 52, (1830).

Stems, 1° to 1½° high, usually bearing a few small bracts, slightly villous; petioles villous with rusty hairs; leaves broadly ovate-cordate, 2′ to 3′ broad, slightly 5 to 9-lobed, lobes aristate-dentate, margin finely ciliate; calyx at time of flowering about 2″ long, narrowly campanulate, glandular-pubescent, lobes half as long as entire calyx, unequal; petals linear, about twice as long as calyx lobes.

Mexico.—Regla, Halsted, (ex. descrip.); South Mexico, in Mountains above Toluca, (Andrieux, No. 356, fide Hemsley).

10. H. ORIZABENSIS, Hemsley, Diag. Pl. Nov. pars. iii. 50, (1880).

Villous with rusty spreading hairs especially the 4′ to 8′ long petioles; stems 1° to 2° high, usually bearing one or two small leaves or laciniate bracts; lower leaves round-cordate, 2′ to 3′ broad, the larger veins villous underneath, the upper surface almost glabrous, slightly and rather obtusely 5 or 7-lobed, lobes crenate, aristate-dentate, margin ciliate; calyx at time of flowering campanulate, glandular-pubescent, about 2″ long; petals linear, about twice as long as calyx lobes; stamens conspicuously exserted.

Mexico.—Sierra de Agua, Müller, (ex descrip.). Peak of Orizaba, (Linden, No. 577, Galeotti, No. 2,835, fide Hemsley).

11. H. RUBESCENS, Torr. Sitgr. Rep., 160, (1854).

Stems, often bearing one or two small leaves or a few bracts, 1° to 18′ high, minutely glandular; petioles slightly villous, or

CHEILANTHES BRANDEGEI, D. C. Eaton.

sometimes almost glabrous; root-leaves round-cordate, sub-cordate or truncate, 1′ to 2′ broad, lobes indistinct, crenate-dentate; calyx at time of flowering rather narrowly campanulate, 2″ to 3″ long, minutely glandular at base, lobes somewhat tinged with red, pubescent; petals linear-spatulate, about twice as long as calyx lobes; stamens occasionally only slightly, but usually conspicuously, exserted.

Mexico.—San Luis Potosi, Schaffner, No. 71, (distrib. as *H. Mexicana*); Parry and Palmer, No. 231. *Texas.*—Chicos Mts., Havard, No. 39. *New Mexico.*—Wright, No. 1,097; Organ Mts., Vasey., Sitgreave's Exp. (type). *Arizona.*—Mt. Graham, Rothrock, No. 411; Mt. Agassiz, Rusby; Santa Rita Mts., Pringle. *Utah.*—Wahsatch Mts., Watson, No. 366; Parry, Nos. 12 and 61; Ogden, Hayden; Stansbury's Island, Stansbury's Exp; Kanab, Mrs. A. P. Thompson; near Great Salt Lake, Porter; Beaver City, Palmer, No. 149. *Nevada*—E. Humboldt Mts., Watson, No. 366. *California.*—Brewer, Nos. 1,759 and 2,101, Lemmon, No. 1,093, Greene, No. 413, Kellogg, Bolander, No. 4,935; Castle Lake, Pringle; Plumas Co., Mrs. Austin; San Bernadino Mts., Parish; Yosemite Valley and Mts., Torrey, No. 152, Bolander, No. 4,935. *Oregon.*—Stein's Mt., Cusick, No. 1,260.

Var. NANA, Gray, Pl. Wright, ii. 64, (1853).

Flowers smaller, stems 6′ to 10′ high.

Arizona.—"Rim Rock," Tonto Basin, Mearns, No. 138; Mexican Boundary Survey, Santa Rita del Cobra, Bigelow, No. 406a. *New Mexico*, Wright.

Var. OREGONENSIS, n. var.

Stems 8′ to 16′ high; calyx broadly campanulate and open, very variable in size, lobes short and obtuse, glandular to glandular-pubescent; styles shorter and more subulate; stamens and styles included at first, at length slightly exserted.

Oregon.—Stein's Mt.; Harney Valley; Siskiyou Mts., Thos. Howell, No. 689. A specimen collected by Mr. Parish on the San Bernadino Mts. in S. Calif., No. 1,820, seems to be an intermediate form, also one from Yosemite, Meehan.

*** Inflorescence glomerate-spicate, often secund.

12. H. BRACTEATA, (Torr.) Seringe in DC. Prodr., iv. 52, (1830). *Tiarella* (?) *bracteata*, Torr. Ann. Lyc. N. Y., ii. 204, (1827). *Oreotrys bracteata*, Raf. Fl. Tellur. ii. 74, (1836).

Small, stems usually several, 3′ to 8′ high, minutely glandu-

lar, naked or bearing two or three small leaves; root-leaves roundish, ½′ to 1½′ broad, subcordate, incisely lobed, lobes crenate-dentate; calyx at time of flowering campanulate, about 2″ long, minutely glandular; petals filiform, only a little longer than calyx lobes; stamens not exserted at first, but slightly exserted later.

Colorado.—Parry, No. 172, Greene; Georgetown, Patterson, No. 31; Denver to Idaho City, Porter; Rocky Mts., Hall and Harbour, No. 205, (in part); Grand Lake, Vasey, No. 217; James, (type of *Tiarella bracteata*); Gray's Peak. *Nevada.*—Empire City, Gray.

††† Flowering calyx 3″ to 5″ long.

* Inflorescence an open, spreading panicle.

13. H. PUBESCENS, Pursh, i. 187, (1814).

H. pulverulenta and *reniformis*, Raf. Med. Fl. i. 243 and 244, (1828).

H. ribifolia, Fisch. and Lall. in Ind. Sem. h. Petrop. 8, 62, (1841).

Stems, usually bearing one or two small leaves, 1° to 3° high, densely glandular, at least above; root-leaves round-cordate, 2′ to 4′ broad, slightly 5 or 7 lobed, veins prominent; calyx at time of flowering oblong-campanulate, somewhat oblique, 3″ to 4″ long, minutely glandular, lobes often unequal; petals broadly spatulate, veined, a little longer than calyx lobes; stamens hardly exserted, the anthers being on a level with the tips of the calyx lobes, sometimes, however, slightly exserted.

Pennsylvania.—Lancaster Co., Small; Birmingham, Miss Davis; near Schuylkill River, Canby; Banks of Susquehanna, Porter; Warriorsmark, Lowrie; Reading, Herb. Phil. Acad. *Maryland.*—Alleghanies, Rafinesque (*H. grandiflora*, Raf. in Herb. Torr.) *Virginia.*—Daubeny, Hot Springs, Curtiss. *North Carolina.*—Vasey; Hick. Nut Gap, Curtiss, Asheville, Thos. Hogg. *Kentucky.*—Rafinesque, (*H. reniformis*, Raf. in Herb. Gray); Bath, Short.

** Inflorescence a narrow panicle.

14. H. HISPIDA, Pursh, i. 188, (1814).

H. Richardsonii, R. Br., Frankl. Journ., 766, t. 29, (1823).

H. lucida, Schlecht., Ind. Sem. h. Hal. 8, (1848).

Stems, usually leafless, 2° to 4° high, hirsute, as are also the petioles, with pale spreading hairs, and above minutely glandu-

lar; leaves round-cordate to broadly ovate-cordate, 2′ to 3′ broad; calyx at time of flowering campanulate, conspicuously oblique, 3″ to 5″ long, lobes unequal; petals small, spatulate, a little longer than calyx lobes; stamens soon exserted, often becoming longer than the petals.

Virginia.—Gray. *Michigan.*—Kalamazoo, Tuthill. *Illinois.*—Babcock; Augusta, S. B. Mead; near Oquawka, Patterson; Ringwood, Vasey; Marion Co., Bebb; Winnebago Co., Bebb; Athens, E. Hall. *Wisconsin.*—Madison, S. H. Watson, Hale. *Iowa.*—Decorah, Collett. *Minnesota.*—Basswood Lake, Arthur, No. 431 (B.) *Dakota.*—Box Elder Creek, W. S. Rusby. *Montana*—Park Co., Tweedy, No. 259; Bozeman Pass, Canby, No. 116, (distrib. as *H. cylindrica*). *Idaho.*—Allen. *British America.*—Hooker; English River, Kennicott; Lake Superior, Macoun; Lake Winnepeg, (Dr. Gunn, in Herb. Torrey); Lake Winnepeg Valley, Bourgeau; Saskatchawan, Bourgeau; Assiniboia, Sourie Plains, Macoun, No. 733; Rocky Mts., Kananaskis, Macoun; Lake Shebandedwan, Ontario, Macoun.

Var. HIRSUTICAULIS, n. var.

Hirsute; stems for their entire length, as well as petioles and larger veins on lower surface of leaves, thickly beset with white or slightly yellowish spreading hairs; stems 1° to 2° high, naked, or bearing one or two very small leaves or laciniate bracts; root leaves round-cordate with a broad and deep sinus at base, 1′ to 3′ broad, with 5 or 7 obtuse lobes, lobes crenate-apiculate, margin ciliate, upper surface glaucous, or nearly so, lower surface pale; calyx at time of flowering campanulate, rather short and broad, about 2″ long, very slightly, if at all, oblique, minutely glandular, parted almost half way down, lobes somewhat unequal, obtuse, green, base of calyx often brownish; petals small, spatulate, green, looking like smaller calyx lobes, and like them minutely glandular, not projecting beyond calyx lobes; stamens much exserted; seeds numerous, about ¼″ long, dark brown, muricate, oblong, curved, triangular in section.

Missouri.—St. Louis, Engelmann; Louisiana, Pech.

This plant differs from *H. hispida* mainly in having an open, spreading panicle, and much smaller flowers. It may, perhaps, be a distinct species, but as there appear to be intermediate forms, it would seem best, for the present at least, to consider it a variety.

§ 2. Stamens always included.

† Flowering calyx 1″–2″ long.

‡ Flowering calyx campanulate.

* Inflorescence a long, narrow, racemose-panicle.

15. H. NOVA-MEXICANA, n. spec.

Stems 1° to 2° high, usually bearing a few small laciniate bracts, glandular-puberulent or pubescent, or even slightly villous, especially at the base and in the case of the younger stems, with short, scattered, pale, yellowish hairs; petioles 1′ to 3′ long, not slender, often grooved or fluted, villous with short yellowish hairs which are continued upon the larger veins on the lower surface of the leaves; leaves thin, sometimes purplish underneath when dried, 1′ to 2′ broad, round-cordate with a deep but usually rather narrow sinus at base, hardly lobed, crenate, mucronate-dentate, margin ciliate, upper surface glaucous, or that of the younger leaves pubescent; calyx at time of flowering short campanulate, broad, open, 1″ to 1½″ long, lobes short and obtuse, pulverulent, the base of the calyx, often chocolate-brown in color, becoming somewhat globose in fruit; petals minute, linear, not longer than calyx lobes; seeds numerous, about ¼″ long, muricate, oblong, almost straight. In one specimen examined (No. 1098 below) eight stamens were found, two of them arising from the same base.

New Mexico.—Wright, No. 1098; Copper mines, Bigelow, Mex. Bound. Survey, No. 407; Pinos Altos Mts., Greene.

** Inflorescence a short racemose-panicle.

16. H. HALLII, Gray, Proc. Acad. Phil. 62. (1863).

Glandular-puberulent; stems 4′ to 8′ high, naked, or bearing a few subulate bracts; leaves round-cordate or sub-cordate, ½′ to 1′ broad, slightly 5 lobed, lobes crenate-dentate; calyx at time of flowering 1½″ to 2″ long, minutely glandular or glandular-pubescent; petals narrowly spatulate with a long slender claw, almost twice as long as calyx lobes.

Colorado.—Georgetown, Jones, No. 499 (distrib. as *H. bracteata*); Grand Cañon of the Arkansas, Brandegee; Upper Arkansas, Porter; Pike's Peak, Sheldon, No. 319, Letterman, No. 27, Canby; Rocky Mts., Hall and Harbour, No. 205 (in part) (type); Greenhorn Mts., Greene. *Idaho.*—Ramshorn Mt., a glabrous form, Newberry.

‡‡ Flowering calyx almost rotate, limb flat, dilated.

17. H. PARVIFOLIA, Nutt., Torr. and Gray Fl., i., 581. (1840).

Glandular-puberulent; stems 6′ to 2° high, usually naked; leaves round-cordate, or occasionally reniform, ½′ to 2′ broad, crenately 5 or 7 lobed; calyx at time of flowering 1″ to 1½″ long, obconical, minutely glandular, lobes short, almost triangular; petals small, broadly spatulate or obovate with a very short claw, usually a little longer than calyx lobes.

New Mexico.—Fendler, No. 264; Santa Fe, Rothrock, No. 61; Santa Magdalena Mts., Vasey. *Arizona.*—Palmer. *Colorado.*—Wolf and Rothrock, Nos. 804 and 805, Parry, No. 173, Vasey, No. 218 and 219, Greene; Gray's Peak, Patterson, No. 32, Gray and Hooker; Lake City, Pease; Chian Cañon and Ute Pass, Porter; Georgetown, Jones, No. 452 (distrib. as *H. Hallii*); South Park, Coulter; Pike's Peak, Rocky Mts., Parry, Nos. 173 and 174, Thomas, Hall and Harbour, No. 204. *Utah.*—Ogden; Wahsatch Mts., Hayden, Watson, No. 368; Bear Valley, Palmer, No. 150. *Nevada.*—Shockley, No. 249. *Wyoming.*—Yellowstone Lake, Hayden; Laramie Plains, Sheldon, No. 88; Yellowstone Park, Tweedy, No. 246; Fort Bridger, Leidy, No. 61. *Oregon.*—Nuttall (type). *Montana.*—Shield's River, Scribner, No. 52a. *British America.*—Cypress Hills, Macoun, No. 54; Milk River Ridge, N. W. T., Havard, Dawson, No. 732.

Alpine specimens of this species are smaller, with a shorter and more compact panicle.

†† Flowering calyx 2″–5″ long.

* Inflorescence a loose, few-flowered raceme.

18. H. RACEMOSA, Watson, Proc. Amer. Acad. xx. 365, (1885).

Glandular-pubescent; stems 4′ to 10′ high, bearing 2 or 3 comparatively large petiolate leaves; leaves reniform to reniform-cordate, crenately lobed and toothed, 1′ to 2′ broad, the younger leaves pubescent along the larger veins on the lower surface, and beset with short scattered hairs on the upper surface, in some plants the older leaves almost glabrous on both surfaces; calyx at time of flowering broadly campanulate, 2″ to 3″ long, glandular-puberulent or pubescent; petals linear-spatulate, occasionally more or less laciniately toothed toward the top, but little longer than calyx lobes.

Washington.—Mount Paddo (Adams) Suksdorf; Mts. north of Ellensburgh, Brandegee, No. 765; Cascade Mts., Brandegee, No. 305 (distributed as "*H. cylindrica*, small form").

19. H. WILLIAMSII, Eaton, Bot. Gazette, xv. 62, (1890).

Stems naked, slender, 1° to 2° high, glandular-puberulent; leaves 4 to 7, in a cluster at base of stem, round-cordate, 1′ to 1½′ broad, hardly lobed, crenate with a ciliate margin, glaucous, lower surface often somewhat purple in the dried specimens; petioles 1′ to 3′ long, slender; calyx at time of flowering obconical, acute at base, minutely glandular, 2″ to 3″ long, 1″ to 1½″ broad; petals caducous, broadly spatulate with a long slender claw, usually 2 to 3 times as long as calyx lobes, in some specimens even longer.

Montana.—R. S. Williams, No. 179 (type); near Jefferson City and Bozeman, Scribner, No. 52b; Nevada Creek, Canby, No. 119; Beaver Head Co., Tweedy, No. 39 (distributed as *Tellima pentandra*). *Wyoming.*—Yellowstone Park, Tweedy, No. 846, Chas. H. Hall.

** Inflorescence thyrsoid.

20. H. SANGUINEA, Engelm., in Wisliz. Rep. 23, (1848).

Stem slender, 1° to 18′ high, glandular-pubescent, naked, or bearing a few diminutive leaves; petioles 2′ to 4′ long, villous with soft, pale spreading hairs; root-leaves round-cordate, 1′ to 2′ broad, somewhat 5 or 7 lobed, lobes crenate-dentate, or almost serrate, margin ciliate; calyx at time of flowering red, campanulate, open, minutely glandular, about 4″ long; petals very short, less than 1″ long and inserted so low upon the calyx that their tips hardly project beyond the calyx-tube.

Mexico.—Chihuahua, Pringle, No. 1588. *New Mexico.*—Wright, No. 1096. *Arizona.*—South Catalina Mts., Pringle; Santa Rita Mts., Pringle; Sanoita Valley, Rothrock, No. 673; Camp Lowell, Parish, No. 86.

*** Inflorescence more or less spicate.

21. H. CYLINDRICA, Dougl., Hook. Fl. Bor. Am. i., 236, (1840).

Stem naked, 2° to 3° high, lower portion as well as petioles and larger veins on lower surface of leaves very villous or hirsute with spreading rusty hairs; petioles rather slender, 4′ to 1° long; leaves 1′ to 3′ broad, round-cordate, almost glabrous above, slightly 5 or 7 lobed, lobes obtuse, crenate, mucronate-dentate; calyx at time of flowering 3″ to 4″ long, campanulate, glandular and scabrous, somewhat oblique, deeply cleft; petals minute or none.

Oregon.—Nuttall, Elihu Hall, No. 160, "Hooker, dupl."

Herb. Gray; Clear Water, Spaulding; Portland, Howell; Cascade Mts., Newberry; Sumass Prairie, Lyall, Oregon Bound Commiss.; Columbia Woods, Nuttall, "*Holochloa elata.*" *Washington.*—Upper Columbia, U. S. Expl. Exp., No. 461; Falcon Valley, Suksdorf. *British Columbia.*—Fletcher. Vancouver's Island, Macoun.

Var. OVALIFOLIA (Nutt.)

H. ovalifolia, Nutt., in T. & G. Fl. i. 581, (1840).

Minutely glandular-pubescent; stems 8′ to 18′ high, naked, or bearing a few subulate bracts; leaves minutely viscid-pubescent on both sides, or occasionally almost glabrous, ½′ to 1½′ long, oval or roundish oval, usually truncate or even somewhat cuneiform at base, but occasionally slightly cordate, crenate or crenately incised, occasionally slightly lobed; calyx at time of flowering campanulate, pubescent, 3″ to 4″ long, lobes somewhat unequal; petals often wanting.

Nevada.—East Humboldt Mts., Jones. *Wyoming.*—Stinking Water, Parry, No. 99; Yellowstone Park, Tweedy, Platt, Hayden Survey (distrib. as *H. cylindrica*). *Idaho.*—Hayden's Exped. *Oregon.*—Blue Mts., Nuttall (type); Union Co., Cusick (a very large flowered form, calyx almost 6″ long). *Montana.*—Bannock, Watson, No. 137; Rocky Mts., S. of Va. City, Hayden. *Washington.*—North Fork Columbia River and Interior, U. S. Explor. Exped. *British America.*—Crow's Nest Pass, and near Kamloops, Dawson; Spencer's Bridge and Morley, Macoun.

Var. ALPINA, Watson, King's Rep., v. 96, (1871).

Glandular-pubescent; stem 6′ to 12′ high; leaves ¾′ to 1′ broad; spikes short, hardly more than 1′ long.

Nevada.—Clover Mts., Watson, No. 367 (type). *Oregon.*—Howell, R. D. Nevius. *Washington.*—Mt. Adams, Suksdorf, Nos. 14 and 26. *British Columbia.*—Kananaskis, Rocky Mts., Macoun; Crow's Nest Pass, Rocky Mts., Dawson.

Var. GLABELLA (Torr. & Gray);

H. glabella, Torr. & Gray, Fl. i. 581, (1840).

Almost glabrous, or slightly pulverulent-pubescent, destitute of spreading hairs; stem naked, 18′ to 2° high; leaves round-cordate to ovate-cordate, often thick and leathery, 1′ to 2′ broad, crenately lobed, veins prominent, lobes crenate, apiculate-dentate; calyx at time of flowering 3″ to 4″ long, campanulate, glandular-pubescent; petals minute or wanting.

Montana.—Judith Mts., Canby; Rattlesnake Canon, Watson, No. 137; Little Belt Mts., Scribner, No. 52; *Oregon.*—Nuttall, (type), Lt. Mullan; Blue Mts., Henderson. *Washington.*—Spokane Co., Suksdorf, No. 299; Cascade Mts., Yakima, Brandegee. *British America.*—Kootanie Pass, Rocky Mts., Dawson.

Var. TENUIFOLIA, n. var.

Glabrous, stem naked, 1° to 2° high; leaves thin, round-cordate, 1′ to 2′ broad, somewhat incisely 5 or 7 lobed, lobes crenate, aristate-dentate, margin minutely ciliate; petioles slender, 2′ to 4′ long; calyx at time of flowering 2″ to 3″ long, campanulate, open, minutely glandular, deeply cleft into somewhat unequal lobes; petals narrowly spatulate, becoming as long, or nearly as long, as the calyx lobes.

Oregon.—Near the Dalles, Thos. Howell (distrib. as *H. glabella*, Nutt). *Washington.*—Sincoe Mts., J. Howell.

In addition to the specimens contained in the Columbia College Herbarium, those of Harvard College, the Academy of Natural Sciences of Philadelphia, the National Herbarium at Washington, the Geological Survey of Canada, Mr. Wm. M. Canby and Prof. Thos. C. Porter have been examined.

A Biographical Sketch of Dr. George Thurber.

By H. H. Rusby.

George Thurber was born in Providence, R. I., on September 2d, 1821, his father being Jacob Thurber, for many years a well-known business man of that city. Although Dr. Thurber was in the strict sense of the word a self-educated man, his chief studies lying in the direction of subjects in which he was specially interested, and being pursued by methods of his own devising, yet he enjoyed for some time the advantages of study at the Union Classical and Engineering School of Providence, conducted by Mr. Thomas C. Hartshorn. Among his schoolmates were several men who have since become distinguished, the most noted of them, perhaps, being Mr. George William Curtis. He never graduated from this institution. By his strong disposition to utilize the results of study in some practical manner, he was soon led to become interested in the subject of pharmacy, and was duly apprenticed to a pharmacist of his native city. During

this appreticeship his taste for chemistry was cultivated to such an extent that when he became himself a proprietor, in partnership with Mr. Joshua Chapin, he pursued the study as a specialty, and fitted himself for special work in that department. About this time he was appointed lecturer on chemistry at the Franklin Society of Providence, the position being purely an honorary one. In 1840 the members of his class presented him with a testimonial in the form of a copy of Turner's Chemistry, the volume being still in the possession of his relatives. His peculiar passion for tracing everything to its origin soon forced him into the study of botany as explaining the sources of the vegetable drugs with whose composition he had already become so familiar. Once introduced to this science, his love for it rapidly grew into an absorbing passion, and he developed an intense desire to make botanical explorations. He therefore eagerly seized an opportunity which presented itself in 1850 for becoming associated with the United States Boundary Commission to settle the boundary between the United States and Mexico, his position being that of botanist, to which were added, after the fashion of the times, the offices of quartermaster and commissary. The duties of this position occupied him for nearly four years, when the commission was disbanded and he returned to his home in Providence. His duties while on this commission were performed in no perfunctory manner. Thoroughly in love with the work which his position brought to him, he secured a collection which will ever be historical, and which formed the subject of Dr. Gray's important contribution, "*Plantæ Novæ Thurberianæ.*" It was upon this expedition that Dr. Thurber discovered the curious *Pilostyles*, which he at once recognized as something very curious, and which he subsequently accurately classified, insisting upon his determination in the face of the persistent incredulity of both Torrey and Gray, until his earnestness led them to an investigation and confirmation. Almost immediately after his return to Providence he was made a member of the Visiting Board of Brown University on Applied Chemistry, and from that institution he subsequently received the degree of A. M. In the year of his return he received, chiefly, I believe, through the influence of Dr. Torrey, an appointment to the United States As-

say Office in New York. His letter of acceptance was written on Christmas day. The thoroughness with which Dr. Thurber assimilated and the persistence with which he retained information is evidenced by the fact that a careful perusal of his diary, written subsequent to his return from Mexico, appears to establish the fact that he did not find it necessary to review his previous knowledge of chemistry in order to fit himself for assuming this important position. He remained in the Assay Office until 1856, when he resigned on account of political differences, this incident well illustrating his perfect candor and uncompromising spirit. Upon being asked for a contribution to the campaign fund of the dominant political party, he, being an enthusiastic admirer of the opposition candidate, inquired, "Is this an invitation or a demand?" He was informed that it was a demand, and at once tendered his resignation. He then established some sort of a connection with the Cooper Union, as a lecturer according to one authority, and according to another as a tenant and student. The former statement is probably the correct one. At about the same time he accepted a position as lecturer on botany and materia medica at the College of Pharmacy of the City of New York, resigning after several terms to occupy the chair of botany and horticulture in the Michigan Agricultural College. Four years later he returned to New York and again lectured for a short time in the College of Pharmacy. He then became editor of the *American Agriculturist*, devoting twenty-two years, the most of the remaining active portion of his life, to this work, which he conducted successfully from every point of view. He established his home at a beautiful point upon the left bank of the Passaic River, near the village of Passaic, which he named "The Pines" after a little grove of large pine trees growing in front of his house. In 1880 he paid a brief visit to Europe, visiting England, France, Belgium, Germany and Switzerland, where he was treated with distinguished consideration by many leading botanists and horticulturists. He always counted among his pleasantest privileges that of being able to return a portion of this pleasant hospitality some years later when he received Sir Joseph Hooker, who accompanied Dr. Gray on a tour through the great West. In 1886 he was made a corresponding member of the

Royal Horticultural Society of London. He was a life member of the American Pomological Society, and presided over its Atlanta meeting. He was also President of the New Jersey Horticultural Society, a corresponding member of the Philadelphia Academy of Sciences, and an active member of the New York Academy of Sciences. From the University Medical College of New York he received the honorary title of Doctor of Medicine.

Two genera of plants have been dedicated to this distinguished man. On page 209 of the first volume of Bentham & Hooker we find accepted the genus *Thurberia*, of Asa Gray, in the *Memoirs of the American Academy*, v. 308. But on page 982 of the same volume the authors announce their opinion that this recognition was erroneous, as the genus *Thurberia* of Gray is not to be separated from *Gossypium*. Mr. Bentham therefore, in the *Journal of the Linnæan Society*, xix, 58, dedicates to him a genus comprising two species of grasses of Texas and Arkansas, and this genus is accredited in the third volume, page 1,118, of the *Genera Plantarum*. We have, therefore, the curious circumstance of having the same name applied to two different genera in different volumes of the same work. This reference is thus given in detail because of an erroneous idea which has been created by the statement in *Garden and Forest*, April 9, page 173, where Gray's genus *Thurberia* is referred to as though it were the accepted one.

It was probably owing to the indefatigable exertions and accompanying exposures of his Mexican service that Dr. Thurber contracted a rheumatism to which he was ever after a martyr. It was painful to witness his frequent attacks, during which he remained steadily at his desk, performing his duties day and night in the midst of the acutest torture. But during the last few years various complications developed which almost incapacitated him for any severe labor, and to these he succumbed on the night of Wednesday, April 2, leaving a brother and three sisters, together with a host of professional and personal friends, to mourn his loss. He was buried in the Swan Point Cemetery, founded, strangely enough, by the same Thomas C. Hartshorn who had instructed him when a boy, and overlooking the beauti-

ful valley of the Seekonk River where in early life he had found his favorite haunts for botanizing.

As a man, Dr. Thurber was frank, truthful and conscientious in all his relations, kind and generous beyond most men, sensitive and sympathetic. Possessed of a perfect physical and moral courage, and of a fortitude ample to second those qualities, he never wavered in the performance of any one of the diversified duties which fell to his lot. Like his warm personal friend Dr. Gray, he was noted for his readiness to turn from his absorbing labors and spare a portion of his limited time for the assistance and instruction of the young; but almost the last thing he would do was to ask any assistance from anyone else or subject them to the slightest inconvenience. At the same time that he was thus genial and considerate of the young, his air had nothing of the patronizing style about it, and he was equally considerate to those who approached him as his equals.

A considerable portion of his time and effort were devoted to the exposure of business and professional frauds, in the humbug column of the *American Agriculturist*, which thus became a terror to quacks, charlatans and swindlers of every description, but particularly to those circulating among the agricultural community, where his influence was widest and strongest. Under his control the advertising columns of this journal were absolutely incorruptible, and unapproachable by any but the most worthy of subjects. Although constantly tempted by the most alluring offers, both for himself and for his publishers, those columns were never known to be opened to any patent medicine or other questionable or evil article; and in thus commenting upon his character, we cannot fail to be impressed with the very unusual spectacle of a large publishing house supporting its editor in refusing, solely from motives of principle, this very lucrative class of patronage. Dr. Thurber carried his discountenancing of secrecy to a point which must appear amusing to any but the most well informed intelligence. He would touch no medicine of any kind unless he was fully informed as to its composition and character, and even in matters of eating and drinking he insisted upon the most perfect knowledge of the nature of the articles. It is even

humorously reported that he could not enjoy his green peas unless he knew the name of their variety.

He was one of the hardest workers that his profession has ever known in this country, and his irregular habits of working and resting unquestionably did much to aggravate his malady and shorten his life. Not infrequently would his labor continue through the night, the hours uncounted, until his family rising, perhaps late on a Sunday morning, would find him still engaged at his writing, the rays of his lamp mingling unnoticed with those of the rising sun. During his attacks of sickness he was accustomed to have his couch drawn beside his desk, where he would sit until, exhausted by suffering and exertion, he would recline until sufficiently rested to resume his writing.

Immediately adjoining his house was his experimental garden, which was very extensive, and to the careful and continuous use of which is largely to be accredited the singular accuracy of detail and realism, and the naturalness of style, which characterize his horticultural contributions.

Unfortunately Dr. Thurber wrote but few articles over his own signature. His chief contributions were to the *American Agriculturist*, in the form of "The Doctor's Talks" and "Notes from the Pines." The latter papers were conspicuous in horticultural literature for the extent and accuracy of the botanical information which they covered. During his residence in Michigan he revised and partially rewrote *Darlington's Agricultural Botany*, which was then published under the title of *American Weeds and Useful Plants*. He wrote also the graminology of the botany of California, and the entire botany of *Appleton's New American Encyclopædia*, which latter, when he assumed charge of it, was said to be in a fair way to inflict a vast accumulation of errors upon the American public. In addition to this accredited work Dr. Thurber made important contributions to science in connection with his oversight of the publications of the Orange Judd Co., as much by the elimination of erroneous matter as by actual additions.

As a botanist Dr. Thurber was keen of discrimination, patient and thorough in research, of retentive memory and possessed of a sound judgment. Yet in all of these qualities, which made him

honored among botanists, he was excelled by his rare ability for instructing in botanical subjects those who possessed little or no knowledge of the science. His clearness of diction, his pleasing style and his ready adaptability to the character of his readers did much to popularize the science, and especially to induce those practically interested in gardening and horticulture to inform themselves more fully of the science on which their art depended. *Garden and Forest*, in a notice of Dr. Thurber, expresses the opinion that his writings did more in his time to elevate the standing of the agricultural and horticultural press of the country than the writings of any other man. Graminology was his well known specialty and there were few, either in this country or abroad, who were his equals. The regret must be universal that he did not live to complete his monograph upon American Grasses. His last paper, upon the poisonous hairs of *Primula obconica*, published in *Garden and Forest*, was one in the writing of which he took the greatest interest and to which he devoted all the enthusiasm of his by-gone youth.

To the members of the Torrey Botanical Club Dr. Thurber was best known as the long-time President of our Association. In March, 1873, he wrote the obituary notice of his warm and life-long friend, Dr. Torrey, at that time the President of the Club, and the following month he acted as Chairman of a committee, in association with Mr. Leggett and Mr. Hall, in drafting formal resolutions concerning the death of this gentleman. On the 29th of April, 1873, he was elected as Dr. Torrey's successor, our present associate, Dr. T. F. Allen, serving with him as Vice-President. This position he occupied for a long series of years—as long as he was able to give attention to the proceedings of the association or to be present at its meetings. In 1880 he was succeeded in the Presidency by Dr. Newberry.

Dr. Thurber was accustomed to saving every letter which he received, however unimportant the subject, so that there is material for greatly extending this brief notice.

His library and collections were left for the benefit of his nephew, Harry Woolson. The bulk of his collections will probably be deposited in the Harvard herbarium.

An Enumeration of the Plants Collected by Dr. H. H. Rusby in South America, 1885-1886.—XIII.

(Continued from page 94.)

Rami graciles, fuscescentes. Petiolus 3-6 cm. longus. Folia tenuiter membranacea, in eadom jugo satis inæqualia, majora 13-18 cm. longa, 6-10 cm. lata. Cymæ 1-2 cm. longæ. Calycis tubus 4 mm. longus; dentes exteriores erecti, 4-5 mm. longi. Baccæ subglobosæ, circiter 1 cm. crassæ. Aff. *Cl. hirta*. Mapiri, 2,500 ft. (2238).

CLIDEMIA CORDATA, Cogn. sp. nov. (Sect. *Sagræa*, Cogn.); fere glaberrima; ramis teretibus, superne leviter compressis, junioribus vix furfuraceis; foliis longe petiolatis, late ovato-cordatis, acutiuscule beviterque acuminatis, minute crenulato-denticulatis, 7-9-nerviis, subtus ad nervos leviter furfuraceis; cymis brevibus, diffusis, paucifloris; floribus 4-meris, brevissime pedicellatis, basi minutissime bibracteolatis; calycis tubo ovoideo, lobis brevissimis, dentibus exterioribus oblongo-linearibus, obtusiusculis, tubo paulo brevioribus.

Rami satis graciles, elongati, fuscescentes. Petiolus 6-10 cm. longus. Folia tenuiter membranacea, 11-16 cm. longa, 9-13 cm. lata. Cymæ 3-5 cm. longæ; pedicelli 1-3 mm. longi. Calycis tubus 2 mm. longus; dentes reflexi, 1½-2 mm. longi. Mapiri, 2,500 ft. (2311).

CLIDEMIA RUSBYI, Britt. spec. nova. Sect. *Sagræa*. Frutex erectus, ramosus; flores in axillis foliorum sessiles congesti; foliis glabris, 5-nerviis, oblongis, acuminatis, basi acutis, 7-9 cm. longis, 3-4 cm. latis; petiolis 1-2 cm. longis; rami tereti; calycis tubus furfuraceis, dentes tubo multo breviores. Mapiri, 2,500 ft. (2320). Nearest *Clidemia septuplinervia*, Cogn. ex descriptio.

CLIDEMIA PILOSISSIMA, Britt. spec. nova. Frutex adscendens, ramosus; flores in paniculas axillares digesti; folia 7-nervia, cordata, acuminata vel acuta, 10-15 cm. longa, 5-8 cm. lata, utrinque stellato-pubescentia, membranacea, longe petiolata; petiolis marginis venisve longe rufo-pilosis; pedicellis longiusculis, crassis, rufo-pilosis, stellato-pubescentibus; fructus globosus, 6 mm. longus. Mapiri, 5,000 ft. (2234). Related to *S. umbrosa*.

CLIDEMIA OBLIQUA, Griseb. Mapiri 2,500 ft. (2317).

Calophysa pilosa, (Don.), Tri. l. c. Mapiri, 5,000 ft. (2315).

Microphysa quadrialata, Naud. l. c. 99.? Falls of the Madeira, (2241).

Bellucia grossularioides, (L.), Tri. l. c. 141. Guanai, 2,000 ft. (2314).

Bellucia imperialis, Sald. and Cogn. in Mart. Fl. Bras. xiv. (4), 515? Mapiri, 5,000 ft. (2330).

Ossæa petiolaris, (Naud.), Tri. l. c. 147. Mapiri, 5,000 ft. (2301; 2310).

Blakea repens, (R. & P.), Don. l. c. 325. Guanai, 2,000 ft. (2342).

Mourinia parvifolia, Benth. in Voy. Sulphur, 97. Mapiri, 5,000 ft. (2681).

Mourinia princeps, Naud. l. c. xviii. 283. Junction of the rivers Beni and Madre de Dios, (2666).

Mourinia? Same locality. (2682).

I am indebted to M. Cogniaux of Verviers, Belgium, the distinguished monographer of this difficult order for the Brazil Flora and DeCandolle's "Monographiæ Phanerogamorum," for many notes and determinations.

LYTHRARIEÆ.

Adenaria floribunda, H. B. K. Nov. Gen. vi. 188. Sorata, 8,000 ft. (1419).

Var. *grisleoides*, (H. B. K.), Kœhne in Mart. Fl. Bras. xiii. (2), 210. Guanui, 2,000 ft. (1966).

Cuphea micrantha, H. B. K. loc. cit. 196. Guanai, 2,000 ft. (1858).

Cuphea Spruceana, Kœhne. Mapiri, 5,000 ft. (1924).

Cuphea verticillata, H. B. K. loc. cit. Sorata, 8,000 ft. (1070).

Cuphea ianthina, Kœhne. Yungas, 4,000 ft. (1068); Sorata, 10,000 ft. (1067); 8,000 ft. (1066); Unduavi, 8,000 ft. (1064); near La Paz, 10,000 ft. (1065). Also a form with narrower leaves from Unduavi, 8,000 ft. (1069).

Physocalymna scaberrimum, Pohl, Flora, 1827, 153. (*P. floridum*, Pohl, Pl. Bras. i. 100). Junction of the Rivers Beni and Madre de Dios (2444).

Punica Granatum, L. Sp. Pl. 427. Tacna, Chili. Cultivated. (464).

ONAGRARIEÆ.

Epilobium andicolum, Haussk. Œst. Bot. Zeit. 1879. Near La Paz, 10,000 ft. (1805); Yungas, 6,000 ft. (1807); Unduavi, 8,000 ft. (1808). The same as Mandon's No. 626.

Epilobium denticulatum, R. & P. Fl. Per. iii. 78. Near La Paz, 10,000 ft. (1806).

Epilobium, a single incomplete specimen from Valparaiso, Chili (2510).

Jussiæa Peruviana, L. Sp. Pl. 555. Mapiri, 2,500 ft. (1794).

Jussiæa latifolia, Benth. in Hook. Journ. Bot. ii. 317. Falls of the Madeira, Brazil (1796).

Jussiæa nervosa, Poir. in Lam. Encycl. Suppl. iii. 199. Guanai, 2,000 ft. (1799).

Jussiæa nervosa, Poir. var. *pubescens*, Mich. in Mart. Fl. Bras. xiii. (II), 155. Guanai, 2,000 ft. (1221). A broad-leaved form, possibly a distinct species.

Jussiæa densiflora, Mich. Flora, 1874, 300. Beni River, Bolivia (1235); Falls of the Madeira, Brazil, (1792).

Jussiæa erecta, L. Sp. Pl. 556. Guanai, 2,000 ft. (1095).

Jussiæa affinis, DC. Prodr. iii. 53. Reis, Bolivia (1793); Falls of the Madeira, Brazil (1795).

Jussiæa octonervia, Lam. Dict. iii. 332. Beni River, Bolivia (1798); Falls of the Madeira, Brazil (1797).

ŒNOTHERA COCCINEA, spec. nova. Caulis basi sublignosus, simplex, ½ met. altus, pubescens, pilis brevioribus; folia alterna, sessilia, lanceolata 5–8 cm. longa, 8–20 mm. lata, remote denticulata, utrinque parce pilosa vel glabrata; flores axillares, solitarii, sessiles, coccinei, 2 cm. lat.; petala ovata, obtusa, integra; capsula cylindrico-ovoidea, hirsuta, 15 mm. longa, 4 mm. lata; semina numerosa, oblonga, compressa, ¼ mm. longa.

Ingenio del Oro, 10,000 ft. (1815; 1976). A very showy species, related to *O. mollissima*, L.

Œnothera rosea, Ait. Hort. Kew. ii. 3. Sorata, 8,000 ft. (1814).

Fuchsia rosea, R. & P. Fl. Per. iii. 89. Near Valparaiso (1800; 1852). Named by Dr. Philippi.

Fuchsia serratifolia, R. &. P. l. c. 86. Yungas, 6,000 ft. (1801).

Fuchsia dependens, Hook. Ic. Pl. t. 65. Yungas (1071; 1802); Unduavi (1804).

Fuchsia Magellanica, Lam. Yungas, 4,000 ft. (1812).

FUCHSIA BOLIVIANA, Britt. spec. nova. Arbor vel frutex glabra. Folia opposita, petiolata, membranacea, ovalia, 6 cm.-12 cm. longa, 3cm.-4cm. lata, utrinque acuta, minute serrulata, petiolis 1 cm. longis. Flores rosei, 2 cm.-3cm. longi, gracile pedicellati, in paniculas foliosas terminales dispositi; calycis tubus tubulosus, lobi lineares, acuti, tubo breviores; petala calycis lobis similia, paulo breviora; stamina petalis paulo breviora; ovarium oblongum; stylo paulo exserto.

Yungas, 6,000 ft. (1813). The same as Mandon's No. 624, Herb. Kew. Related to the Mexican *F. arborescens*, Sims.

F. salicifolia, Hemsl. Unduavi, 8,000 ft. (1803).

Fuchsia, a fragment of a species near *F. ampliata*, Benth., but corolla tube more slender and leaves acuminate. Probably undescribed.

SAMYDACEÆ.

Casearia Javitensis, H.B.K. Nov. Gen. v. 366. Falls of the Madeira, Brazil (2415).

Casearia spinosa, Willd. Sp. Pl. ii. 626. Junction of the Rivers Beni and Madre de Dios (1382).

Casearia sylvestris, Sw. Fl. Ind. Occ. ii. 752. Reis, 1,500 ft. (1383).

Casearia punctata, Spr. Neue Entd. ii. 154. Guanai, 2,000 ft. (1384). The same as Lechler's No. 2514 from Peru, Herb. Kew.

Casearia oblongifolia, Camb. in St. Hil. Fl. Bras. Merid. Guanai, 2,000 ft. (1974), also 1977 from same locality, also 2494, collected in fruit, all doubtfully referred to this species.

Casearia bracteifera, Sagot in Herb. Kew.? Falls of the Madeira, Brazil (2574).

CASEARIA MEMBRANACEA, spec. nova. Arbor inermis, ramulis cinereis. Folia ovalia, tenuiter membranacea, utrinque acuta, 9-13 cm. longa, 3-5 cm. lata, minute serrulata, glabra, petiolata, punctata. Flores in fasciculas numerosa; calycis pedunculisque pubescentibus, staminibus 10. Junction of the Rivers Beni and Madre de Dios (2074).

Casearia, species collected in fruit. Falls of Madeira (2614 a).

ABATIA BOLIVIANA (Mandon & Wedd.). (*Graniera Boliviana*, Mandon & Wedd. Pl. And. Boliv. No. 1511). Sorata, 10,000 ft (2468).

A New Fern.

(Plate CIV).

CHEILANTHES BRANDEGEI:—Caudice brevi adscendente; stipitibus cæspitosis fragilibus castaneis ad basim paleis brunneis lanceolatis vestitis; frondibus membranaceis deltoideo-ovatis 3-6 uncialibus bi-tripinnatis viridibus supra fere laevibus infra secus venulas exigue pilosis; pinnulis ovatis obtusis nunc amplis nunc minoribus crenatis vel majoribus crenato incisis, basi plerumque rachi decurrenti-adnatis, venulis conspicuis dichotomis; involucris interruptis nunc sub-confluentibus viridibus margine scarioso parce ciliatis.

Magdalena Island and San Benito, in Lower California, collected in January, March and April, 1889, by Mr. Townsend Stith Brandegee of San Francisco.

This plant has in habit and the shape of the pinnæ and segments, some resemblance to *Pellæa Seemanni*, Hooker, and in giving Mr. Brandegee the names of the ferns he collected in his visit to Lower California I referred it with some doubt to that species. But the interrupted involucres are plainly those of *Cheilanthes*. The fern should be placed in § *Adiantopsis*, but there is no species to which it is very closely related.

The drawing by Mr. Arthur Hollick represents a plant gathered in January and a part of a frond gathered a few months later, when the pinnæ were more fully expanded.

D. C. EATON.

DESCRIPTION OF THE PLATE.

Fig. 1.—A plant, natural size.
2.—A pinna, enlarged.
3.—A fruiting segment, enlarged.
4.—Part of same, magnified.

A New Fern for North America.

ASPLENIUM FONTANUM (L.), BERNH. (*Asplenium Halleri*, R. Brown.) Many years ago the late J. M. McMinn, then residing at Williamsport, sent me a package of plants, and amongst them I found an unnamed fern, whose label states that it was collected by him "on a dry, rocky cliff, on Lycoming Creek, Lycoming County, Penn., July, 1869." At the time, I feared a foreigner had inadvertently been put in the place of something else, and hence gave it no further consideration, although, afterwards, the

collector assured a botanical friend that I was mistaken in my judgment. I now believe that the suspicion was wholly groundless, and this belief is confirmed by the discovery, in my herbarium, of another unnamed specimen of the very same fern, collected by Mrs. E. J. Spence, near Springfield, Ohio, and sent me by Dr. Beardslee, of Painesville, in 1871, as one of the plants of the State.

The specimens agree closely with *Asplenium Halleri*, of Europe, except that the mucronate-spinulose tips of the divisions of the pinnæ are somewhat longer.

Against its admission into our flora no good reason can be urged on the score of improbability, for its congeners and near allies, the little rock-ferns of the old world, *A. Trichomanes*, *A. viride* and *A. Ruta-muraria*, occur here also. Because of common resemblance, as well as its small size and rarity, it has, perhaps, been often overlooked. Sought for, with intent to find, it will no doubt yet be detected at other points in our territory, and a full supply obtained.

In this connection I may mention that *Asplenium Bradleyi*, D. C. Eaton, has recently been discovered in Lancaster County, Penn., by Mr. John K. Small—a remarkable extension of its range to the north and east. But, when it is known that the same enthusiastic young botanist has also discovered in the same region a considerable number of stations for its usual associates, *A. montanum* and *A. pinnatifidum*, it need awaken no surprise.

THOS. C. PORTER.

Botanical Notes.

Contributions from the National Herbarium. Under the above title an important serial publication has been begun by the Division of Botany of the U. S. Department of Agriculture. It is designed to afford a place for the presentation of the valuable results now being obtained by the botanists of the Department and others who may be especially employed to study the large collections made by the special agents now in the field in various parts of the country. Two numbers have already been printed. The first contains an account of Dr. Edward Palmer's collections in the Southwest by Dr. Vasey and Mr. Rose; the

second an enumeration of Mr. G. C. Nealley's collections during the past three years in southwestern Texas by Dr. Coulter.

Reviews of Foreign Literature.

Della presenza di Stipole nella Lonicera cærulea. Nota di S. Sommier, (Nuovo Gior. Bot. Italiano, April, '90).

In this article the author describes a form of *Lonicera*, called by him *L. cærulea*, *L.* forma *stipuligera* which he collected in Western Siberia, and which in his specimens unite the forms of the species heretofore known as *a glabrescens*, Rupr., *β villosa*, Torrey and Gray, and *γ edulis*, Turcz., with elliptical, ovate or obovate leaves varying as to size, and both villous or glabrous, most of the specimens having well developed interpetiolar stipules. When young they are merely foliaceous expansions that unite the two opposing petioles, making a more or less circular disk. This disk, called by Sig. Sommier "stipular disk" was in some plants slightly developed, in others attaining nearly 11 mm., and when young is of the same color, consistency, etc., as the leaves; later they turn the color of the woody stem, and are persistent after the fall of the leaves.

These stipules bear a strong resemblance to those of *Pentapyxis stipulata* and *Lycesteria glaucophylla*, especially to those of the latter plant, which is described in the Flora of British India as having stipules "entirely absent or more or less developed into a small semi-circular coriaceous lamina." In *Lonicera Californica*, Torr. and Gray, the superior leaves are connate like those of *Lonicera Caprifolium*, the lower ones having detached appendages (called stipuliform appendages in the Flora of North America) that correspond as perfectly to the disk of *L. cærulea* as to the appendages called stipules by Hooker and Thomson in *Pentapyxis*. In *L. Californica* it is hard to say whether the stipuliform appendages attaching themselves to the bases of the upper leaves, form the perfoliate disk or whether the connate leaves lobed at their bases are the origin of the stipuliform appendages.

Sig. Sommier suggests that, as there is an ever increasing number of species, genera and orders, formerly thought exstipulate, in which stipules, either rudimentary or in a single stage of the development of the plant, are being found, this might be an

argument in favor of the hypothesis that stipules like leaf-sheaths are the remains of primitive foliaceous appendages from which originated the monocotyledons and dicotyledons, (Saporta et Marion, L'Evolution du Règne Végétal) and he concludes with the following deductions:

1st. That this species is a link between the sections Caprifolium and Xylosteum, that is between the perfoliate and imperfoliate *Loniceræ*.

2d. That the presence of stipules in the genus *Pentapyxis* will nullify the characters that absolutely distinguish this genus from *Lonicera*, (*L. Californica* furnishing another example of a stipulate species).

3d. That stipules in the order Caprifoliaceæ do not have that taxinomical value heretofore attributed to them, as in the same species, or even in the same individual they may be more or less developed or are absent altogether.

4th. That the presence of stipules in the Rubiaceæ loses some of its value as a distinguishing character between that order and the Caprifoliaceæ. A. M. V.

Index to Recent American Botanical Literature.

Araucarioxylon of Kraus, with Compiled Descriptions and Partial Synonomy of the Species—A Revision of the Genus. F. H. Knowlton. (Proc. U. S. Nat. Mus. xii. 601-617).

In this contribution an attempt is made to arrange the various fossil genera *Araucarites*, *Dadoxylon*, *Pissadendron*, *Cordaites*, etc., according to their supposed affinities, and to give a complete synonomy and bibliography of each species. In this arrangement three genera only are recognized, *Cordaites*, Unger, *Dadoxylon*, Endl., and *Araucarioxylon*, Kraus. Eleven species are included under the first mentioned genus, twenty-six under the second and thirteen under the last. The structure of the wood of each species is described and the habitat given. Aside from the value of the descriptions, the citations of synonomy and bibliography will be appreciated by all students who have occasion to study this class of fossil plants.

Babcock Herbarium. (Rept. Dept. Nat. Hist. Northwestern Univ. 1888, pp, 9, 10).

An account of the donation and probable extent of the above

herbarium, now in the possession of the Northwestern University.

Babcock Herbarium—List of Mosses in the. (Rept. Dept. Nat. Hist. Northwestern Univ., 1889, pp. 14-16).

Beggiatoa alba and the Dying of Fish in Iowa. L. H. Pammel. (Abstract, Proc. Iowa Acad. Sci., 1887-9, pp. 90, 91).

Bignonia rugosa. J. D. H. (Bot. Mag. Tab. 7,124).

Brodiæa multiflora. Carl Purdy. (Zoe, i. 101-102).

Catalogue of Plants Growing without Cultivation in Ripon and the Near Vicinity. Mrs. C. F. Tracy. (Pamph. pp. 26, Ripon, Wis., March, 1889).

Catalogue of the Mosses in the Collections of Dr. Vasey and Dr. Lapham, now in the University Herbarium. (Rept. Dept. Nat. Hist. Northwestern Univ. 1889, pp. 17-19).

Cherry Disease—A. L. H. Pammel. (Abstract, Proc. Iowa Acad. Sci. 1887-9, pp. 92-94).

A description of *Cylindrosporium Padi*, Karst., supposed by some to be identical with *Septoria Pruni* and *S. Cerasina.*

Ciperaceas de Mexico—Nota acerca de las. P. Maury. (La Naturaleza (II) i. 294-296; translated from Bull. Soc. Bot. France).

Cotton Root-Rot. L. H. Pammel. (Bull. No. 7, Texas Agric. Exp. Sta., Nov. 1889. Pamph. 8vo. pp. 30, Pl. I–V).

Ozonium auricomum is figured.

Cypress Knees—The Causes of. S. V. Clevenger. (Am. Nat. xxiv. 581).

In this contribution to the much discussed question, the author refers to a previous article in which the anchor and buttress theory of the angular roots was advocated, and suggests that the strain which inevitably occurs at the angles would result in sap exudation and the piling up of indurated tissue such as is found in the "knees." In support of this proposition he quotes from Herbert Spencer's Principles of Biology as follows: "Many commonplace facts indicate that the mechanical strains to which upright gravity plants are exposed, themselves cause increase of the dense deposits by which such plants are enabled to resist such strains."

Doubling of Flowers—Observations upon. Byron D. Halsted. (Pop. Sci. Monthly, xxxvii. 374-381).

In a popular form the author gives an excellent resumé of the facts and theories in regard to the transformation of parts and the abnormalities of structure occurring in nature and induced by cultivation.

Elements of Structural and Systematic Botany for High Schools and Elementary College Courses. Douglas H. Campbell. (8vo., pp. ix + 253, Boston, Ginn & Co., 1890).

This little book is a welcome addition to our available material for teaching the general principles of Botany. It consists of chapters on the structure of cells and tissues, followed immediately by others on the classification of plants, the primary subdivisions recognized being (1) Protophytes, including Slime Moulds, Schizophytes and Volvocineæ; (2) Algæ, grouped under the Green, the Brown and the Red; (3) Fungi, including as classes, Phycomycetes, Ustillagineæ, Ascomycetes and Basidiomycetes; (4) Bryophytes; (5) Pteridophytes and (6) Spermaphytes (why not Spermatophytes?) Under this last group we note one of the most valuable features of the book, viz., the departure from the generally accepted arrangement of the angiosperms, and the substitution therefor of modern ideas of classification. The difficulty in the use of the system here adopted will be in the lack of floras arranged on a similar plan. Chapters are devoted to the fertilization of flowers and to histological methods. The book is illustrated by one hundred and twenty-eight cuts, nearly all of them new, exhibiting the structure of all the larger groups, and they are among the most valuable elements of the volume. N. L. B.

Fresh Water Algæ. (Rept. Dept. Nat. Hist. Northwestern Univ. 1890, pp. 18-21).

A list of one hundred and four species, collected in Cook Co., Illinois.

Fungous Diseases of Fruit Trees in Iowa—Some. L. H. Pammel. (Abstract, Proc. Iowa Acad. Sci., 1887-9, pp. 91, 92).

Description of *Entomosporium maculatum.*

Fungi Affecting Fishes—An Aquarium Study. Samuel Lockwood. (Journ. N. Y. Mic. Soc. vi. 67-85, Pl. 23-24).

This article is divided into two parts, one dealing with *Saprolegnia*, the other with *Devœa*, a new genus allied to the for-

mer. *Saprolegnia ferox* and *Devœa* are both figured. In the latter genus is described and figured a new species, *D. infundibus*, found upon *Hippocampus* in captivity.

Heterosporous Fern Allies of the Pacific Coast and Mexico. Lucien M. Underwood. (Zoe, i. 97-101).

An enumeration with critical notes and citations of known localities for the species of *Isoetes*, *Marsilia*, *Pilularia* and *Azolla*. *I. Pringlei* is described as new from Guadalahaja, Mex. (Pringle, No. 2,633); *Azolla filicoides*, Lam., recently collected by Mr. Brandegee in San Mateo Co., Cal., is new to the United States flora. Prof. Underwood is mistaken in his statement that "the last catalogue of Mexican Pteridophytes was by Fournier (1872)." Mr. Hemsley's Botany of the Biologia Centrali-Americana enumerates those known up to 1886. Professor Underwood now lists just twice the number of heterosporous species there recorded. N. L. B.

Hickory—The False Shagbark (*Hicoria microcarpa*). L. H. Bailey. (Amer. Gard. xi. 386-389; eleven illustrations).

Professor Bailey contributes an exceedingly valuable essay on this interesting tree and its relations to the Shag-bark and Pig-nut Hickories. He contends, and to our mind establishes conclusively, that it is a well-marked species, its nearest ally being the Pig-nut, from which it may readily be distinguished, however, by its thin-shelled, strongly beaked nut with dehiscent husk, sweet edible meat, and its shaggy bark, which splits off in narrow strips. The observed range given for the tree is from New York to Michigan and south to Delaware. With this paper in hand botanists will doubtless be able to considerably extend these limits. It is quite as abundant as the Pig-nut in the vicinity of New York City. N. L. B.

Ilex longipes. W. Trelease. (Gard. and For., iii. 344, fig. 46).

Insular Floras. Lorenzo G. Yates. (Reprint from Ninth Ann. Rept. State Mineralogist Calif. pp. 11-20; no date).

The exceedingly interesting flora of San Miguel, Santa Rosa, Santa Cruz and the Anacapas, to which attention has been brought from time to time by our West Coast botanists, is here catalogued, so far as known, with locality and name of collector after each species.

Lueddemannia Pescatorei. J. D. H. (Bot. Mag. Tab. 7123).

Masdevallia Carderi. J. D. H. (Bot. Mag., Tab. 7125).

Medicinal Plants of Alabama—The. Chas. Mohr. (Pamph. 8vo, pp. 17, Mobile, Alabama).

This list is of much value to the apothecary, and, so far as it goes, to the botanist also. The number of species enumerated is necessarily limited, but the notes on distribution are full, and common names are given for each species.

Medicinal Plants of the State of Minnesota—An enumeration of the. Carl Weschcke. (Pharm. Rundsch. viii. 155-157).

Micromycetes Novi. P. Hariot and P. A. Karsten (Journ. Mycol. xii. 129-131).

Calosphæria Smilacis and *Cornularia Rhois* collected by Lesquereux in Ohio are described as new.

Microseris—The Pappus of. T. S. Brandegee. Zoe, i. 126-127).

Mosses—New Canadian. N. C. Kindberg. (Ottawa Nat. iv. 61-65).

In this number are described one new species of *Dicranum* one *Physcomitrium*, one *Webera*, a new *Thelia*, a new *Thuidium*, two *Brachytheciums*, one *Isothecium*, one *Rhynchostegium*, two *Amblystegiums* and one *Harpidium* besides four new varieties and two subspecies. E. G. B.

Naturalized Plants of Southern California—III. S. B. Parish. (Zoe, i. 122-126).

Among these interesting notes is one on the introduction by the Chinese of *Sagittaria Chinensis* at San Bernardino.

Notes on North American Trees—XVIII., XIX. C. S. Sargent. (Garden and Forest, iii. 331, 332 and 344).

Descriptions of the wood of the following species are given: *Helietta parvifolia, Kœberlinia spinosa, Ilex monticola, Ceanothus velutinus, var. arboreus, Rhus integrifolia, Cercidium floridum, Acacia Farnesiana, A. flexicaulis, Prunus ilicifolia,* var. *occidentalis, Cratægus Crus-galli,* var. *berberifolia* and *Lyonothamnus asplenifolius.*

Notes on some of the rarer Plants found in Blue Earth and Pipestone Counties, Minnesota. John B. Leiberg. (Bull. Minn. Acad Nat. Sci. iii. 37, 38).

Otacanthus—Sur les Characteres des. H. Baillon. (Bull. Mens. Linn. Soc. Paris, No. 104, 831, 832).

Differing from Mr. Bentham, M. Baillon holds that *O. cæruleus*, Lindl., belongs to the Scrophularineæ rather than to the Acanthaceæ, and that the plant collected by Pearce in Bolivia referred to in the "Genera Plantarum" under *Otacanthus*, represents a distinct genus of true Acanthaceæ, and proposes for it the name *Tacoanthus Pearcei*, the generic name derived anagrammatically.

N. L. B.

Penstemon gentianoides. (Garden, xxxvii. 603, illustrated).

Philadelphia Botanists—Some early. W. E. Leonard. (Bull. Minn. Acad. Nat. Sci. iii. 29-37).

Notes on the life and works of Schweinitz, Nuttall, Rafinesque and Darlington.

Pinus Tæda, L.—The Old Field or Loblolly Pine. J. T. Rothrock. (Forest Leaves, iii. 25, illustrated).

Plantæ Glazioviana novæ vel minus cognitæ. P. Taubert. (Beiblatt zu Engler's Bot. Jahrb. xii. Heft 1).

New species of Brazilian Plants collected by Dr. A. Glaziou are described in the following genera: *Dichorisandra, Barbacenia, Brosimum, Daphnopsis, Adenostephanus, Roupala, Aristolochia, Triplaris, Tetraplacus, Patagonula, Belangera, Weinmannia* and *Macrodendron*, a new genus of Saxifrageæ; a number of the descriptions are by Dr. C. Mez.

Plants of Santa Catalina Island. T. S. Brandegee. (Zoe i. 107-115).

Notes on several of the more interesting plants of the island, with a list of species supplementary to Mr. W. S. Lyon's catalogue printed in the Botanical Gazette, 1886.

Ptelea aptera. (Garden and Forest, iii. 332, fig. 45).

Revised Names of Plants of New Jersey, Extracted from Britton's State Catalogue. H. H. Rusby. (Reprint from Drug. Bull. July, 1890, pamph., pp. 23).

In this handy little pamphlet the author has arranged alphabetically all the changes in nomenclature from Gray's Manual and other recent text books and catalogues. The list is a timely one, and will be found very useful.

Report of the Department of Botany, Iowa State Agricultural College and Farm. L. H. Pammel. (Reprint from 13th Bien. Rept. Board of Trustees, 1888 and 1889, pp. 42-48).

This report is principally taken up with brief notes upon some of the recently introduced weeds, such as *Cuscuta epithymum*, *Solanum Carolinense*, *S. rostratum* and *Lactuca Scariola*, also loco-poisoning, due to *Crotalaria sagittalis* and *Astragalus mollisimus*.

Sand-hill Flora—Characteristic. M. A. Carleton. (Trans. Kans. Acad. Sci. xii. Part i. 32-34).

A list of eleven observed species is given for the region of the sand hills in the principal river valleys of Kansas. The species thought worthy of mention under the above title are: *Prunus Chicasa*, *Lithospermum hirtum*, *Evolvulus argenteus*, *Yucca angustifolia*, *Discopleura capillacea!* (which grows with us in swampy land or even in water), *Viola tricolor*, var. *arvensis*, *Cristatella Jamesii*, *Linaria Canadensis*, *Aplopappus divaricatus*, *Frœlichia gracilis* and *Hosackia Purshiana*.

Silk Cotton Tree—The. (Garden and Forest, iii. 341, 342, illustrated).

Under this title is a description and representation of a tree of *Eriodendron anfractuosum*, from a specimen in front of the townhouse of Nassau, West Indies.

Some Western Plants. Wm. M. Canby. (Bot. Gaz xv. 150).

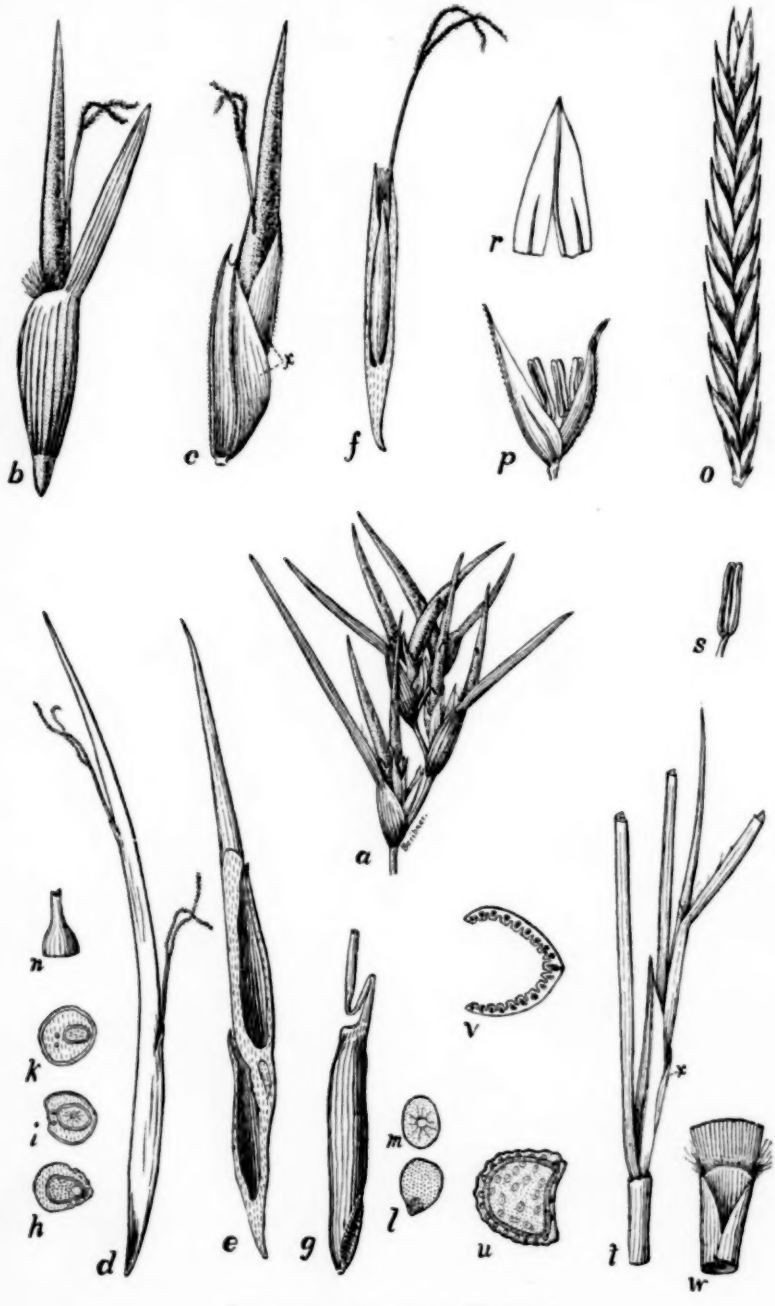
Astragalus Tweedyi, identical with specimens collected and distributed by Mr. Howell as *A. collinus*, Dougl. is described as new. Mr. Canby relegates *A. Californicus*, to *A. collinus*, Dougl., var. *Californicus*, Gray. A doubtful species of *Erigeron*, allied to *E. pumilus*, is described under the provisional name *E. Scribneri*. *Trillium sessile*, var. *Californicum*. (Garden and Forest, iii. 320, fig. 44).

Varieties Not Soon Wearing Out—Some Reasons for. Byron D. Halsted. (Am. Nat. xxiv. 577-581).

• *Willows Presented to the Henry H. Babcock Herbarium by M. S. Bebb, Esq., of Rockford, Ill.* (Rept. Dept. Nat. Hist. Northwestern Univ. 1889, pp. 20-23).

This list includes a list of hybrids and also a description of *Salix glaucophylla*, Bebb, and its varieties.

JOUVEA STRAMINEA, Fourn.?



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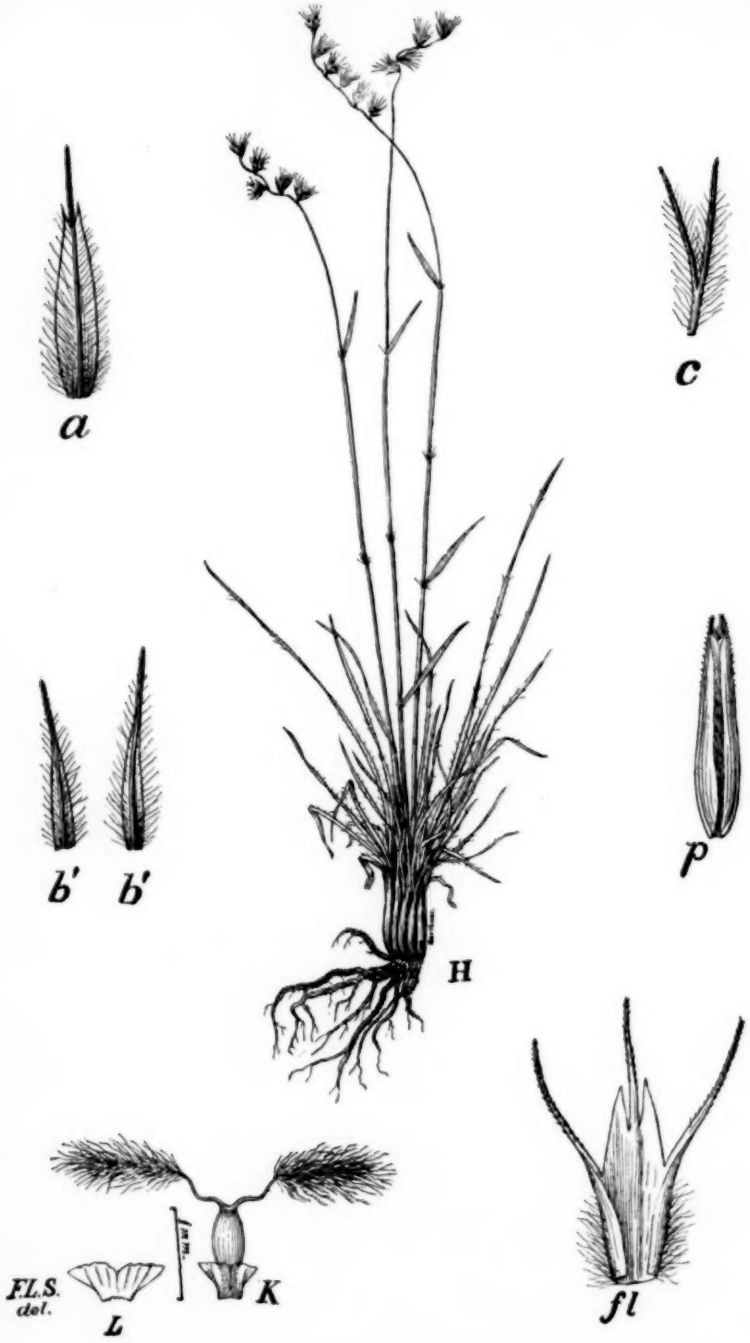

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